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Drawing as a User Experience Research Tool

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ABSTRACT

This paper discusses the use of participant-generated drawings as a user experience research method. In spite of the lack of background literature on how drawings can generate useful insights on HCI issues, drawings have been successfully used in other research fields. After briefly introducing such previous work, two case studies are presented, in which drawings helped investigate the relationship between media technology users and two specific devices, namely television and mobile phones. The experiment generated useful data and opened for further consideration of the method as an appropriate HCI research tool.

Categories and Subject Descriptors

H.5.2 [Information Interfaces and Presentation (e.g. HCI)]:
User Interfaces – *evaluation/methodology*.

General Terms

Measurement, Experimentation, Human Factors.

Keywords

Drawing, user experience, memories, television, mobile phone.

1. INTRODUCTION

Exploring detailed aspects of people's life can be done in many ways: Standard ethnographic methods include interviews (in-depth, repeated), activity logging (automatic or via diaries) or remote prompting. These methods help researchers immerse into people's life more or less deeply and over various time periods, from a specific point in time to several weeks, months or even years. However efficient these methods are, they suffer from being time consuming in planning, conducting and analyzing. Sometimes one might need a snapshot of a specific part of people's life from a sample of participant bigger than what can be afforded using the abovementioned methods. Decreasing the resources necessary to measure personal user experiences has been on the agenda of HCI researchers, and thus rapid UX evaluation strategies have been developed and applied. Beebe introduced and defined "Rapid Assessment Process" [3], and Miller further proposed to focus on three key aspects of evaluation design [6]: Focus and key informants (to limit the amount of data collected), Interactive observations (to improve the quality of the data collected), and Collaborative data analysis (to help analyzing the data collected).

This paper examines how drawings can tackle the methodological challenge of providing deep insight on test participants' personal matters in an easy way, in a timely fashion, and using a relatively large sample size. The type of personal stories collected and the level of intimacy user experience researchers can access through drawings will be exemplified through the application of the method to a specific research agenda, namely investigating the relationship between users of televisions and mobile phones and the devices.

The study related in this paper partly took place during a visit to a foreign institution as part of the author's doctoral study. The socio-historical approach to media studies taught at the visited institution encouraged the author to investigate technology-free user study tools. Moreover the cultural and linguistic gap experienced during the stay provided an excellent opportunity to try non-verbal user experience investigation methods.

2. DRAWING AS A RESEARCH METHOD

Drawings and sketches have been part of humans' communication tools palette since their early evolutionary stage. Whether it is for visualizing specific ideas, expressing artistic inspiration, supporting learning process, or ensuring durable memory, drawings are used almost everywhere. In fact when learning how to express themselves, humans rely on drawings very early, prior to writing. In their first years of life, children learn to use drawings as a communication mediator. At the same time, the child gradually includes writing in the drawings, enhancing clarity in the ideas expressed [1]. The important role drawings play in human development explains the vast academic literature available related to children's drawings and their interpretation.

It has been argued that simple drawings can help convey complex ideas, especially in the business world [8]. For instance Dan Roam demonstrates that drawings help clarifying ideas, expressing them rapidly without the need for complex technology, and sharing them openly encouraging discussions. It is further argued that "*the value of visual information lies [...] during the action of drawing*", that is during the creation process of the image rather than in the image itself [7]. Mills considers drawing as a visual conversation, for which the performance itself is crucial to make sense of the message conveyed.

In design, drawings are widely used in order to illustrate and explore scenarios and ideas through storytelling, and storyboards are considered an efficient and powerful tool for illustrating a succession of events [9]. Exploring people's life, opinions and thoughts through drawing are however less popular.

Recently, ethnographers have used drawings to discuss medical conditions with patients. While using drawings for exploring how people understand illness, Guillemin demonstrated that drawings can indeed generate a broad and in-depth perspective on the study at hand. The author agrees with Mills in saying that studying the drawing produced alone is not enough, but should be complemented by the analysis of the knowledge built by the drawer while creating the drawing [4]. Additionally, Guillemin notes that a drawing is a snapshot of how the drawer understands a subject at the specific time of the drawing. She reckons the limitations of this visual expression tool and argues that drawings should be used as a complement of additional research methods.

Guillemin's findings are corroborated by Kearney and Hyle who identified the following benefits and drawbacks of using drawings as a research method for investigating the emotional effects of change in an educational institution [5].

1. Drawings reveal emotional aspects that would not be covered in word based communication
2. Participant focus on the key aspect of their story
3. Drawings needs to be complemented by participant explanation
4. Response to the drawing task varies according to personal and situational characteristic that may be hard to control
5. The lack of boundaries associated with drawing alleviates participants freedom of expression
6. Likewise, researcher-imposed structure determines interpretation of drawings
7. Drawings is suitable for data triangulation when used in complement to other research tools

Furthermore, considering drawings as a support for focus groups involving children, Yen presented evidence that drawings had the following positive effects on the study outcome [11].

8. It helped create a relaxed and comfortable atmosphere, and released the pressure to answer immediately
9. It enhanced the communication between the researcher and the children by providing further insight on the children's perspective on the topic discussed, as well as offering children the possibility to express more personal experiences
10. It allowed better identification of groupthink and gave each idea expressed an equal chance for consideration

It should also be reminded that drawings can be culturally reflective. In a study comparing children drawings in Japan and the United States, La Voy et al (2001) discovered that when drawing people, Japanese children tend to include more details and represent humans larger but with fewer smiles than their American counterpart. These differences are explained by cultural clues of how children are raised in both societies. [10]

A limitation to the method, which is common to all qualitative methods, is a matter of validity, bound to interpretation. When someone (the drawer) communicates an idea through drawing to somebody else (the viewer), the idea goes through various levels of interpretation, which may alter the original meaning thought of by the drawer. First, mental images are hard to draw due to their high level of abstraction, their tendency to get easily disturbed, and their dimensionless nature [2]. Second, the drawer verbalization and viewer interpretation are prone to inaccuracies potentially leading to confusion. However this critique applies to any visual- and verbal-based exchanges between an author and an audience. Rather than considering this an issue, Guillemin suggests considering the drawings as one of the many ways to perceive the study subject.

3. CASE STUDIES

This section presents two specific applications of drawing as a mean of understanding the relationship between media technology users and two media devices: television and mobile phone. The first case served as a pilot study in order to test and improve the method. Nevertheless, it also generated valuable data which can be analyzed. The second iteration builds from the pilot study and was conducted in a different cultural environment.

3.1 Pilot Study: Project Seminar in Japan

3.1.1 Setup and participants

The pilot study took place as a social event during a three-day project seminar. All participants knew each other, for the project had been running for several years and members met at multiple occasions prior to the seminar. After the second day's dinner,

everyone gathered in the meeting room where further discussions about the project were to take place after the drawing experiment. Participants were handed a set of paper sheets. On the first sheet, a description of the author's project and the purpose of the study reminded the participants about the experiment. The four remaining sheets contained a few lines of instructions and a large empty square on the rest of the page for drawing. Pens of various types and colors were available to all participants, who could use any combination of them. Participants were sitting on the floor either in small groups or individually. Interaction between participants during the experiment was possible but not mandatory. A total of 30 minutes was allocated to the entire test, including introductory speech. The sets of paper sheets were collected after each participant completed his/her drawings, in order to limit potential alterations.

Twenty-one participants took part in the pilot study. At thirty-six years old in average, they were mainly males (17 against 4 females). Their occupation was closely related to the academic world, and included nine researchers, five students, four professors, two assistant professors and one graphic designer.

3.1.2 Tasks

The study investigated participants' relationship with TV and mobile phone separately: The two first sheets focused on television and the two last on mobile phone. On the first sheet participants were asked to draw the layout of their house, indicating the media devices regularly in use. Additionally, participants were instructed to illustrate media devices used simultaneously. For the second drawing, participants were asked to illustrate an impressive memory related to television. It could be a memory about anything that marked them somehow deeply. The drawings concerning the mobile phone followed the same approach: First participants had to picture themselves, depicting the mobile devices they carry around with them. Then they should recall and illustrate an impressive memory associated with their personal mobile phone.

3.1.3 Results

Analyzing the data collected solely based on the drawings can be a difficult exercise and has been argued to be insufficient [4]. Nevertheless, as a first step into the analysis it leaves the opportunity to interpret participant answers and identify trends and categories. Later this can be used for selecting a few participants for further examining representative contributions.

Focusing on home media usage, the analysis should filter out the excess of information that appears in most drawings. Sketching the layout of the home is only the support task for studying where and how media devices are used in the home. This comment is actually valid for all drawings regardless of the topic at hand. As illustrated in Figure 1-(a), Japanese home drawings are usually complemented by text clarifying a device, piece of furniture or specific use situation.

When asked to depict a memory related to television, the majority of Japanese participants (58%) portrayed memories related to the TV content, and little about the device itself or the social interaction around it (21% each). Half of the memories (50%) involved the participant alone, and 29% involve family members (as illustrated in Figure 1-(b)).

Self-depicting oneself leads to reflecting on one's behavior, which some Japanese participants expressed through their drawings. Additionally, four participants specifically represented several situations in which they carry mobile devices. In general, participants depicted themselves carrying 2.5 mobile devices

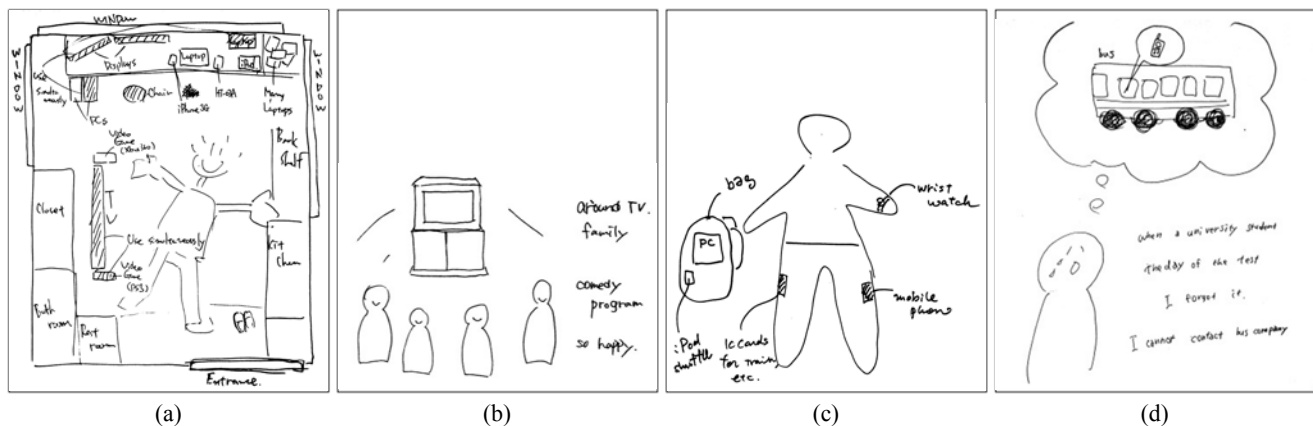


Figure 1. Drawings collected during the Japanese project seminar illustrating a home and media devices in use (a), an impressive memory involving TV (b), a self-depiction including mobile devices (c) and an impressive memory involving mobile phone (d).

(such as mobile phones, computers, or music players). A few considered more exotic devices (e.g. watch, transportation cards). Concerning mobile phones, they were mostly located in a pants pocket (48%), often in a bag (26%) and sometimes in a jacket pocket (19%). Figure 1-(c) is an example of typical self-depiction.

Finally, memories about mobile phones mostly related to experiences where the device had been broken, lost, forgotten or otherwise misused (48%, as depicted in Figure 1-(d)), as well as specific use situations (43%). Those memories were mostly associated with negative feelings (52%), rather than positive (24%) or neutral (14%) ones. Even more than with memories involving TV, mobile phone related memories concerned the participant alone (62%).

3.2 Study 2: Graduate Course in Denmark

The second experiment repeated the pilot study in a different cultural context, and included a few minor modifications in the setup. The tasks remained strictly identical in both studies. The participants also differed in the second study as all were graduate students attending a User Experience Design course.

3.2.1 Setup and participants

This study took place during a two-hour lecture introducing students to qualitative methods for user experience research. The exercise was conducted after a short break at the beginning of the second hour of the lecture. The lecturer gave a brief and general introduction to the method before starting the exercise, which lasted about 20 minutes. The task sheets differed from the pilot study by the size allocated to each drawing. In order to avoid potential blank page syndrome, two drawings were expected per page, instead of one per page during the pilot. Participants were sitting at their desk as during the lecture and could interact between each other. Pens were distributed to participants who didn't have one.

Thirty-seven graduate students took part in the second study. They were again mostly males (26 against 11 females) and 24 years old in average.

3.2.2 Results

Drawings from the Danish students could be categorized in a similar way then their Japanese counterpart.

The home drawings can be classified in two categories according to the amount of details included. The range of complexity between drawings varied considerably from minimalistic

(illustrated in Figure 2-(a)) to very detailed, a short majority belonging to the former category.

When it came to remembering a remarkable event related to TV, Danish students mentioned the device itself in majority (46%), mostly illustrating scenes of use or acquisition (illustrated in Figure 2-(b)). Memories related to the TV content (38%) as well as the surrounding social environment (29%) were also mentioned. The people involved in most of these memories as well as the associated feelings were unclear and were matter of interpretation.

Danish students represented themselves carrying 1.8 mobile devices in average, mostly focusing on the cell phone, sometimes complemented by a laptop or music player. Most participants (38%) represented themselves using their mobile phone, hence carrying it in their hand (as illustrated in Figure 2-(c)). The second most popular location for carrying mobile phones was the pants pocket (35%). A surprisingly representative number of drawings (16%) pictured the user and devices separately.

Finally, memories related to mobile phones referred equally to situations in which the device was broken, lost, or misused, than to specific use situations (37% each). Those memories involved mostly the participant alone (58%). As with the TV-related memories, the feelings associated with mobile phone related memories were very hard to identify without making assumptions based on the content depicted.

4. DISCUSSION

The following topics emerged in the high-level evaluation of the drawings collected through the two studies.

4.1 Personal Matters

It seems that drawing makes it easy to express personal matters. In both Japan and Denmark, intimate stories were depicted. It is argued that these stories would take longer to collect through verbal interviews, as the act of drawing provides both a personal sphere to reflect in (centered around the paper sheet) as well as time to think and organize one's thoughts.

It is further argued that drawing provides an opportunity for reflecting on one's behavior, which opens for further discussions with the drawer. For instance both Japanese and Danish participants realized that they were sometimes using two phones at the same time and that could be considered strange.

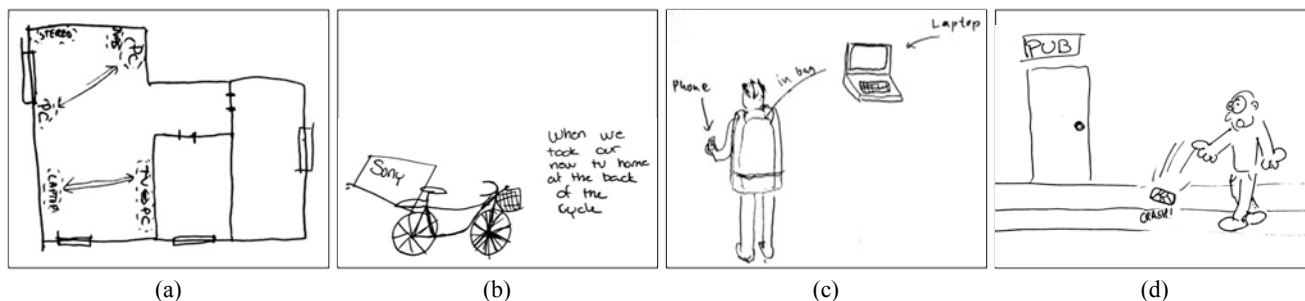


Figure 2. Drawings collected during the Danish graduate course illustrating a home and media devices in use (a), an impressive memory involving TV (b), a self-depiction including mobile devices (c) and an impressive memory involving mobile phone (d).

4.2 Ubiquitous Mobile Phones

Environmental factors should be considered when asking people to remember a remarkable event related to a specific device. Some participants in both Japan and Denmark expressed their difficulty to think about such a memory related to mobile phones. In fact they considered the device to be so present in their everyday life that finding an extraordinary event linked to it was hard.

4.3 Japan vs. Denmark

In general Danish drawings were more ambiguous and harder to interpret on their own than the Japanese ones. For instance it was easy to determine whether a Japanese memory was associated with positive, negative or neutral feelings. On the contrary drawings collected in Denmark were ambiguous and could only be guessed, calling for further discussion with the authors.

In both countries most memories related to mobile phones referred to the use or misuse of the device by the participant alone. However when remembering an event related to TV, Japanese participants referred mostly to the TV content, while Danes focused on the device more frequently. Japanese also visibly experienced these events either alone or with family members, while Danes were more ambiguous on the matter.

4.4 Acquaintance among Participants

Even though test users should work on their own to produce the drawings, the presence of colleagues, friends or strangers around might influence productivity and the level of attention to details. However, the drawings collected during both experiments seem to indicate no influence of the level of acquaintance among subjects on the output. It could even be argued that both familiar and unfamiliar social surroundings may positively influence how people perform during such activity. In a familiar social setting, one might want to produce something to impress or amuse friends, and when surrounded by strangers, one might want to appear assiduous. Nevertheless, consistency bias may occur in case of participants exchanging heavily during the study.

5. CONCLUSION

To the extent of the knowledge acquired while conducting the study and during the evaluation process, drawing seems to provide qualitative insights on the user experience with technology. The following statements have been verified and summarize the findings of the experiment so far:

1. Drawing helps create a relaxed and comfortable atmosphere in which test participants are willing to express personal matters
2. The absence of boundaries in drawings further encourages participants to reveal personal aspects of their lives
3. Responses are influenced by the experimental setup

4. Drawings should be used in triangulation with other research methods

These findings however need to be further investigated, combined with additional user experience evaluations as suggested in the literature and compared to other inquiry methods in order to assess the performance of drawings as a useful HCI research tool.

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